

Amendment and Response

Applicant: Ray A. Walker

Serial No.: 10/044,476

Filed: Jan. 10, 2002

Docket No.: 10019374-1

Title: METHOD AND APPARATUS FOR TRANSFERRING INFORMATION BETWEEN A PRINTER PORTION AND A REPLACEABLE PRINTING COMPONENT

REMARKS

This Amendment is responsive to the Non-Final Office Action mailed July 29, 2003, in which claims 1-25 were rejected. With this Response, claims 7-12 have been amended, and claims 22-25 have been cancelled. Claims 1-21 remain pending in the application and are presented for reconsideration and allowance.

Claim Objections

Claim 11 was objected to because of an informality. Specifically, claim 11 refers to "The ink-level sensing system of claim 7...", but claim 7 discloses a replaceable printing component, not an ink level sensing system. The Examiner has correctly construed that the claim should state "The replaceable printing component of claim 7..." Claim 12 has been noted by the Applicant to contain the same informality as in claim 11.

Claims 11 and 12 have been amended to correct the informality and now state "The replaceable printing component of claim 7..." Accordingly, withdrawal of the objection is respectfully requested.

Claim Rejections under 35 U.S.C. § 102

Claims 7, 9, 12-13, 15, 18-20, and 22 stand rejected under 35 U.S.C. §102(b) as being anticipated by Maurelli et al. (U.S. Patent No. 6,099,101).

Regarding independent claim 7, Maurelli et al. is said to disclose a replaceable printing component for use in a printing system, the replaceable printing component for containing a supply of print material for use by the printing system to form images on media (referring to the Abstract and column 1); a reservoir having an interior space for containing printing material (referring to figure 3, reference 64); and a linking device disposed entirely within the interior space of the reservoir for emitting a signal indicative of printing material within the interior space of the reservoir, wherein the reservoir is formed of a material so that the emitted signal passes through the reservoir for providing information to the printing system (referring to figure 3, reference 14; column 5, lines 14-24; and column 6, lines 58-67).

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Independent claim 7 has been amended with this Response, and now claims a replaceable printing component for use in a printing system, the replaceable printing component for containing a supply of printing material for use by the printing system to form images on media. The replaceable printing component comprises a reservoir having an interior space for containing printing material, and a wireless linking device disposed entirely within the interior space of the reservoir for emitting a signal indicative of printing material within the interior space of the reservoir wherein the reservoir is formed of a material so that the emitted signal passes through the reservoir for providing information to the printing system.

Maurelli et al discloses an apparatus for disabling the refill and reuse of an inkjet cartridge. A disabling card 10 containing a processor 12 and sensor 14 is placed inside the inkjet print cartridge. The sensor 14 produces signals corresponding to the condition of the printhead cartridge inkwell into which the card 10 is inserted. Different types of sensors 14 may be employed to produce different types of signals depending upon the circumstances under which it is desired to disable the inkjet nozzles. Thus, the type of sensor 14 deployed will depend upon the criteria used to determine when to disable the printhead cartridge (such as ink volume remaining, number of nozzles fired, etc.). The processor 12 receives the signals from the sensor 14 and monitors the output of the sensor 14 to determine when to disable the inkjet printhead cartridge. When the sensor 14 output indicates the time is right, the processor 12 sends a signal that causes capacitors 16 to discharge a strong electric current to the nozzle resistors of the printhead cartridge. The strong current created by the capacitors 16 disables the nozzle resistors. **Because capacitors 16 are located on card 10 inside the printhead cartridge and the nozzle resistors are located outside of the printhead cartridge, an electrically conductive path must be established between the capacitors 16 and the nozzle resistors.** The electrical connection between the capacitors 16 and the nozzle resistors is completed using connection plate 18.

In some embodiments of Maurelli et al., the processor 12 is in electrical communication with the printer electronics. An electrical connection 62 places the processor 12 in electrical communication with the printer electronics 60. Communication between the processor 12 and printer electronics 60 occurs **via electrically conductive paths**. The

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electrically conductive paths for communication between the processor 12 and printer electronics use connection plate 18, whose presence is required for transmission of the nozzle disabling current (see Figure 3, elements 80 and 20).

Amended independent claim 7 clearly specifies that the replaceable printing component uses **a wireless linking device disposed entirely within the interior space of the reservoir** for emitting a signal indicative of printing material within the interior space of the reservoir, wherein the reservoir is formed of a material so that the emitted signal passes through the reservoir for providing information to the printing system. There is no teaching or suggestion in Maurelli et al. that a wireless linking device be disposed entirely within the interior space of the reservoir, as presented in independent claim 7. Rather, Maurelli et al. clearly teaches the use of electrical connections between the processor 12 and the printer electronics 60. See, for example, Column 8, Lines 30-45 stating “an electrical connection 62 places the processor 12 in electrical communication with the printer electronics 60” and “through electrical connection 62, the printer electronics 60 can monitor the disabling apparatus to ensure that it has not been disconnected or modified.” Also, see Column 9, Lines 21-25, stating “another way of ensuring that the printhead disabling system has not been circumvented is to provide a communication line 80 from the processor 12 on the card 10 to the printer electronics.”

As shown and described in Maurelli et al., the communication between processor 12 and the printer electronics does not occur using a wireless linking device, as claimed in independent claim 7. Rather, communication between the processor 12 and printer electronics occurs via electrically conductive paths (see Figure 3, elements 80 and 20). For at least this reason, Maurelli et al. does not anticipate the subject matter of amended independent claim 7. Accordingly, withdrawal of the rejection of amended independent claim 7 under 35 U.S.C. §102(b) is respectfully requested.

Dependent claims 8-11 have been amended to conform to the language of amended independent claim 7.

Regarding claim 9, Maurelli et al. is said to disclose the replaceable printing component is a replaceable ink reservoir (referring to the Abstract and Column 1); the linking device includes a sensor that provides an output signal indicative of ink within the interior

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space of the ink reservoir and wherein the output signal is coupled to the printing system by the linking device (referring to Column 5, Lines 14-24; and Column 6, Lines 58-67).

Regarding claim 12, Maurelli et al. is said to disclose the reservoir does not contain electrical conductors that extend from within the interior space of the reservoir to a location outside the reservoir (Figure 3)

Dependent claims 9 and 12 depend, either directly or indirectly, from amended independent claim 7, which is in allowable conditions for the reasons discussed above. For at least this reason, dependent claims 9 and 12 are also in allowable condition. Additionally, the Applicant points out that Maurelli et al. specifically teaches the use of electrical conductors that extend from within the interior space of the reservoir to a location outside the reservoir (see elements 20 and 80 of Figure 3). For this additional reason, claim 12 is not anticipated by Maurelli et al. Accordingly, withdrawal of the rejection of claims 9 and 12 under 35 U.S.C. §102(b) is respectfully requested.

Regarding independent claim 13, Maurelli et al is said to disclose a printing system having a printer portion and at least one replaceable print material reservoir, the printer portion and the at least one replaceable print material reservoir exchanging information therebetween (referring to figure 3); a first wireless link associated with the replaceable print material reservoir, the first wireless link disposed entirely within an interior space for containing print material within the replaceable print material reservoir; and a second wireless link associated with the printer portion, the second wireless link receiving replaceable reservoir information from the first wireless link by transmission of information in a wireless manner (referring to figure 3, reference 12, 14).

Independent claim 13 claims a printing system having a printer portion and at least one replaceable print material reservoir, the printer portion and the at least one replaceable print material reservoir exchanging information therebetween. **The printing system comprises a first wireless link associated with the replaceable print material reservoir.** The first wireless link is disposed entirely within an interior space for containing print material within the replaceable print material reservoir. **A second wireless link is associated with the printer portion.** The second wireless link receives replaceable reservoir information from the first wireless link by transmission of information in a wireless manner.

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As noted above with regard to amended independent claim 7, Maurelli et al. does not show, teach or suggest the use of a wireless link for exchanging information between the replaceable print material reservoir and the printer portion. Rather, as discussed in greater detail above, Maurelli et al. teaches the use of electrical conductors extending through the side of the print cartridge for communication between the print cartridge and the printer electronics. Accordingly, the comments presented above with regard to amended independent claim 7 are equally applicable to independent claim 13. Because Maurelli et al. does not show, teach or suggest a wireless link associated with the print material reservoir and the printer portion for exchanging information therebetween, it is respectfully submitted that Maurelli et al. does not anticipate the subject matter of independent claim 13. Accordingly, withdrawal of the rejection of independent claim 13 under 35 U.S.C. §102(b) is respectfully requested.

Regarding claim 15, Maurelli et al. is said to disclose the replaceable print material reservoir is a replaceable ink reservoir and wherein the replaceable information is ink level information for the replaceable ink reservoir (referring to the Abstract and Column 1)

Regarding claim 18, Maurelli et al. is said to disclose the printer portion is an ink jet printer and wherein the replaceable print material reservoir contains ink (referring to Figure 3, the Abstract, and Column 1).

Dependent claims 15 and 18 depend, either directly or indirectly, from independent claim 13. As independent claim 13 is in allowable condition for the reasons discussed above, dependent claims 15 and 18 are also in allowable condition. Accordingly, withdrawal of the rejection of claims 15 and 18 under 35 U.S.C. §102(b) is respectfully requested.

Regarding independent claim 19, Maurelli et al is said to disclose a method for transferring status information from an ink reservoir to a printer portion (column 6, lines 58-67); determining status information of the ink reservoir using a sensor disposed within an interior space of the ink reservoir, the interior space of the ink reservoir for containing ink (figure 3, reference 14); transferring status information using a wireless link from the interior space of the ink reservoir through a sidewall of the ink reservoir to the printer portion (column 6, lines 58-67).

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Independent claim 19 claims a method for transferring status information from an ink reservoir to a printer portion. The method comprises determining status information of the ink reservoir using a sensor disposed within an interior space of the ink reservoir, the interior space of the ink reservoir for containing ink; and transferring status information using a **wireless** link from the interior space of the ink reservoir through a sidewall of the ink reservoir to the printer portion. As discussed above with respect to independent claims 7 and 13, Maurelli et al. does not show, teach or suggest the use of a wireless link to transfer status information from the interior space of the ink reservoir to a sidewall of the ink reservoir to the printer portion. Rather, as detailed above, Maurelli et al. teaches the use of an electrical conductor to transfer the information from the print cartridge to the printer electronics. Accordingly, it is respectfully submitted that independent claim 19 is not anticipated by Maurelli et al., and withdrawal of the rejection of independent claim 19 under 35 U.S.C. §102(b) is respectfully requested.

Independent claim 20 depends from independent claim 19, which is allowable for the reasons discussed above. Accordingly, dependent claim 20 is also in allowable condition. Therefore, withdrawal of the rejection of dependent claim 20 under 35 U.S.C. §102(b) is respectfully requested.

Regarding independent claim 22, Maurelli et al. is said to disclose a replaceable ink container for providing ink to an inkjet printing system (referring to the Abstract and Column 1); a sensing system within an interior space of an ink reservoir for sensing parameters of ink within the ink reservoir, the interior space of the ink reservoir for containing ink, and wherein ink type within the ink reservoir is determined by the inkjet printing system based on the sensed parameters (referring to Figure 3, reference 14)

Independent claim 22, as well as dependent claims 23-25 have been cancelled from the application.

Claim Rejections under 35 U.S.C. § 103

Claims 1-6, 8, 10-11, 14, 16-17, 21 and 23-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Maurelli et al. (U.S. Patent No. 6,099,101) in view of Walker (U.S. Patent No. 6,302,527).

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Regarding claim 1, Maurelli et al. is said to disclose an ink level sensing system for determining ink level in an ink reservoir and providing this ink level information to a printing system (referring to the Abstract), an ink reservoir having an interior space for containing ink, the ink reservoir having a sensor disposed within the interior space of the ink reservoir; the printing device including a processor for receiving the ink reservoir, the printing device including a processor for receiving ink level information that is coupled through the ink reservoir by the sensor within the interior space of the ink reservoir (referring to Figure 3, reference 12, 14; and Column 1, Lines 5-11). Maurelli et al. does not disclose a radio frequency interface. However, Walker is cited as disclosing the sensor and processor are radio frequency interfaces (Column 2, Lines 8-14).

The Examiner states it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Walker into the invention of Maurelli et al. The Examiner states that the motivation for the skilled artisan in making the sensor and processor radio frequency interfaces is to gain the benefit of being able to easily direct and transmit information, and the facility of transmitting information through radio waves is well known to one of ordinary skill in the art. The Examiner further cites Maurelli et al. as teaching "different types of sensors 14 could be employed to produce different types of signals depending upon the circumstances under which it is desired to disable the ink jet nozzles," which, the Examiner finds, naturally suggests replacing the sensor with a radio frequency interface.

Independent claim 1 of the present application claims an ink level sensing system for determining ink level in an ink reservoir and providing this ink level information to a printing system. The ink level sensing system comprises an ink reservoir and a printing device configured for receiving the ink reservoir. The ink reservoir has an interior space for containing ink. The ink reservoir has a radio frequency interface disposed within the interior space of the ink reservoir. The printing device includes a radio frequency interface for receiving ink level information that is coupled through the ink reservoir by the radio frequency interface within the interior of the ink reservoir.

The Examiner's combination of Maurelli et al. and Walker is respectfully traversed. Specifically, contrary to the Examiner's suggestion, one skilled in the art would not

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incorporate the teachings of Walker into the invention of Maurelli et al. The reason that one skilled in the art would not incorporate the teachings of Walker into the invention of Maurelli et al., is that such a combination effectively renders the invention of Maurelli et al. inoperable.

As clearly set forth in Maurelli et al., the purpose of card 10 inside the inkjet print cartridge is to disable the nozzle resistors with a high current from the capacitors 16. One skilled in the art would clearly recognize that a high current cannot be delivered from capacitors 16 to nozzle resistors in the printhead using a radio frequency linking device, as presented in independent claim 1. That is, **one skilled in the art would recognize that the invention of Maurelli et al. requires an electrically conductive path from inside the print cartridge to the outside of the print cartridge where the nozzle resistors reside.** Because an electrically conductive path from the interior to the exterior of the cartridge is required for the operation of the invention of Maurelli, one skilled in the art would have no need or use for the radio frequency linking device of Walker. The Examiner's statement that Maurelli et al. teaches that different types of sensors 14 could be employed to produce different types of signals is unhelpful, in that *sensors* 14 are not the same as the *processor* 12 which communicates with the printer electronics. Rather, the type of sensor 14 used depends solely upon the criteria used to determine when to disable the printhead cartridge, and is unrelated to how information is communicated with the printer electronics. Thus, **one skilled in the art would not read Maurelli et al. as suggesting different means of communication between the processor 12 and printer electronics, but rather would read Maurelli et al. as suggesting different criteria which may be used to determine when to disable the printhead cartridge.**

In contrast to the Examiner's characterization, **Maurelli et al. consistently shows and teaches the use of an electrically conductive path from the interior of the print cartridge to the exterior of the print cartridge.** For example, Maurelli et al. at Column 8, Lines 30-45 and Column 9, Lines 21-25 teaches providing a communication line 80 from the processor 12 to the printer electronics. There is no suggestion in Maurelli et al. that any other manner of communication be utilized. Further, given the requirement that a large current be transferred from capacitor 16 to nozzle resistors outside the cartridge, one skilled in the art

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would make use of those existing electrical paths, rather than introducing a totally different type of communication between the print cartridge and the printer electronics.

For at least these reasons, one skilled in the art would not combine the references as suggested by the Examiner. Further, the combination of Maurelli et al. and Walker does not make the invention of independent claim 1 obvious, as Maurelli et al. requires an electrically conductive path from inside the print cartridge to the outside of the print cartridge and therefore teaches away from the use of radio frequency communication as claimed in claim 1. Accordingly, withdrawal of the rejection of independent claim 1 under 35 U.S.C. §103(a) is respectfully requested.

Dependent claims 2-6, 8, 10, 11, 14, 16, 17, and 21 each depend, either directly or indirectly, from one of independent claims 1, 7, 13 and 19. For the reasons discussed above, each of independent claims 1, 7, 13, and 19 are in allowable condition. Accordingly, the claims depending from those allowable independent claims are also in allowable condition. Therefore, withdrawal of the rejection of dependent claims 2-6, 8, 10, 11, 14, 16, 17, and 21 under 35 U.S.C. §103(a) is respectfully requested.

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CONCLUSION

In light of the above, Applicant believes independent claims 1, 7, 13 and 19, and the claims depending therefrom, are in condition for allowance. Allowance of these claims is respectfully requested.

Any inquiry regarding this Amendment and Response should be directed to either Matthew B. McNutt at Telephone No. (512) 231-0531, Facsimile No. (512) 231-0540, or Kevin B. Sullivan at Telephone No. (858) 655-5228, Facsimile No. (858) 655-5859. In addition, all correspondence should continue to be directed to the following address:

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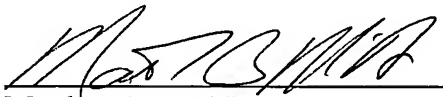
Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Non-Fee Amendments, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 28th day of October, 2003.

By 
Name: Matthew B. McNutt